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10/760,126	01/16/2004	Bruce R. Ferguson	MSEMI.110A	7205

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EXAMINER	
PIGGUSH, AARON C	
ART UNIT	**PAPER NUMBER**
2838	
NOTIFICATION DATE	**DELIVERY MODE**
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/760,126	FERGUSON, BRUCE R.	
	Examiner	Art Unit	
	Aaron Piggush	2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *9-11,13,14,16-23 and 25-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *9-11,13,14,16-23 and 25-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 9-11, 13, 14, 16, 18, 19, 21, 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oglesbee (US 6,246,214) in view of Krall (US 5,621,299) and Takizawa (US 5,739,596).

With respect to claims 9, 10, and 16, Oglesbee discloses a method for controlling battery power comprising the acts of: coupling a first input terminal for receiving a first external power source to a system power terminal (abstract, connections near no. 400 in Fig. 5, and col 3 ln 1-15); coupling an internal battery to the system power terminal via series-connected regulating transistor (battery no. 201 in Fig. 2, transistor no. 203 in Fig. 2, and abstract); charging the internal battery by linearly regulating the regulating transistor with an adjustable voltage at a control terminal of the transistor to conduct a charging current in a first direction from the system power terminal to a positive terminal of the internal battery during a charging mode (no. 205 in Fig. 2 and col 4 ln 35-49), wherein the level of the current provided to the internal battery is controlled by the level of the adjustable voltage to prevent a current from exceeding a predefined threshold (col 4 ln 3-49); and discharging the internal battery by regulating the regulating transistor to conduct a discharging current in a second direction from the positive terminal of the

internal battery to the system power terminal during a discharging mode (no. 204 in Fig. 2 and col 4 ln 3-34).

However, Oglesbee does not expressly disclose selectively providing a first or a second external power source to a device (i.e. wherein this is interpreted to mean that there are two separate external power sources which can be switched between) by use of a first isolation diode with a bypass transistor coupled across it and a second isolation diode with a second bypass transistor coupled across it so that the second power source can be isolated when the first power source is on. As noted above, Oglesbee does disclose adjusting both the charging current and the discharging current, but his threshold control appears to be focused on the discharging current (it is obvious that this threshold control could also be applied to the charge control in the same manner).

Krall discloses selectively providing a first or a second external power source to a device (no. 27 and 29 in Fig. 1, including switches no. 14 and 16) and adjusting the charging current to prevent a supply current from exceeding a predefined threshold (no. 47 in Fig. 1, all components of Fig. 5, and col 6 ln 33-67), in order to prevent damage to the wiring or the batteries resulting from too great of a current or the heat generated therefrom.

Takizawa discloses a system with plural power supplies (no. 101 and 102 in Fig. 1) wherein each input terminal from each power supply/source is connected to the system via an isolation diode and a bypass transistor (no. 103a, 103, 105a, and 105 in Fig. 1, col 5 ln 60 to col 6 ln 33), wherein the first bypass transistor is turned on when the first power supply is selected, the second bypass transistor is turned on when the second power supply is selected, and the second bypass transistor is forced off to effectively isolate the second power supply when the

first power supply is detected (col 2 ln 15-28 and col 6 ln 34-41), in order to provide power from one source while avoiding potential power transfer between the two power supplies.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to provide a selectable first or second external power source and adjust the charging current to keep it from exceeding a predefined threshold in the device of Oglesbee, as did the device of Krall, and to include first and second isolation diodes and bypass transistors for the first and second power sources, as did Takizawa, so that the batteries and wiring would not be damaged from too great of a current and so that multiple power sources could selectively provide power while avoiding any damaging/undesired effects from the power sources being connected at the same time (provides greater control of the circuit).

With respect to claim 11, Oglesbee discloses wherein the impedance of the transistor varies to limit the level of the charging current (col 3 ln 36-46 and col 4 ln 3-49). Furthermore, when the transistor is off, its impedance is so high that current cannot flow through, and when the gate is supplied with certain voltages, the impedance is lowered so that a current may flow.

With respect to claim 13, Oglesbee discloses sensing a voltage difference between the system power terminal and the positive terminal of the internal battery to determine an operating mode (col 2 ln 58-62 and col 4 ln 3-39), wherein the charging mode occurs when the voltage on the system power terminal is greater than the voltage of the internal battery (col 4 ln 35-49 and abstract) and the discharging mode occurs when the voltage on the system power terminal is less than the voltage of the internal battery (col 4 ln 3-34 and abstract). This is further understood because when the external power of the system is functioning correctly and supplying power to the device, it is used to charge the battery and when the external power of the system is

functioning incorrectly or is turned off and not supplying power to the device, the battery will be used to supply power. Additionally, current flows from the source of the higher potential to the source of the lower potential, as is well-known to one of ordinary skill in the art.

Additionally, “sensing a voltage difference" is met by Oglesbee during his description of deltaV (col 2 ln 58-62), and even if that description did not meet the phrase "sensing a voltage difference", the current sensing system (col 4 ln 3-34) meets that language because in order for current to flow, there must be a voltage difference between two points.

With respect to claim 14, Oglesbee discloses wherein the discharging mode occurs in response to a discharge command (no. 204 in Fig. 2, wherein 234 is a typographical error in the reference which should be labeled 204 according to the specification, and col 6 ln 43-63).

With respect to claims 18 and 28, Oglesbee discloses sensing current supplied by the external power source and generating an associated current sense signal (col 4 ln 3-49 and col 6 ln 43-63); charging the internal battery by regulating the transistor to conduct a charging current in a first direction from the system power terminal to a positive battery terminal during a charging mode (no. 205 in Fig. 2 and col 4 ln 35-49), wherein the current is linearly adjusted (overriding a driving signal) to limit the supply current and prevent it from exceeding a predefined threshold (col 4 ln 3-49); and discharging the internal battery by regulating the transistor to conduct a discharging current in a second direction from the positive battery terminal to the system power terminal during a discharging mode (no. 204 in Fig. 2 and col 4 ln 3-34).

However, he does not disclose sensing a supply current from the second external power source (i.e. wherein this is interpreted to mean that there are two external power sources which

can be switched between, as noted in claim 16). As noted above, Oglesbee does disclose adjusting both the charging current and discharging current, but his threshold control appears to be focused on the discharging current (it is obvious that this threshold control could also be applied to the charge control in the same manner).

Krall discloses selectively providing a first or a second external power source to a device (no. 27 and 29 in Fig. 1, including switches no. 14 and 16), sensing a supply current from the second external power source (no. 47 in Fig. 1, all components of Fig. 5, and col 6 ln 33-67), and adjusting the charging current (overriding the driving signal) to reduce the transistor's current level when the current sense signal exceeds the threshold value (no. 47 in Fig. 1, all components of Fig. 5, and col 6 ln 33-67), in order to prevent damage to the wiring or the batteries resulting from too great of a current or the heat generated therefrom.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to sense a supply current from the power source and adjust the charging current level when the current sense signal exceeds the threshold value in the device of Oglesbee, as did the device of Krall, so that the batteries and wiring would not be damaged from too great of a current.

With respect to claim 19, Oglesbee discloses wherein the regulating transistor is a MOSFET (or field effect transistor) with a configurable body contact and with a source terminal coupled to the system power terminal and a drain terminal couple to the internal battery, wherein the configurable body contact is coupled to the system power terminal during a charging mode and to the internal battery during a discharging mode (no. 203 in Fig. 2, abstract, col 1 ln 10-14, and col 3ln 8-15). Furthermore, it would have been beneficial to use a P-channel MOSFET due

to circuit simplification in medium and low power applications (versus an N-channel MOSFET). It would also be beneficial to configure/connect it as the enhancement mode MOSFET because it would be less subject to random static charges (i.e. greater protection). Please also note couple is defined as joining together, and by that definition, the claim language is still reasonably met by Oglesbee.

With respect to claims 21 and 27, Oglesbee does not expressly disclose coupling an overriding diode between the first input terminal and a control terminal of the second bypass transistor for automatically disconnecting an external secondary power source when the external primary power source is connected.

Krall discloses automatically disconnecting an external secondary power source when the external primary power source is connected (col 3 ln 59-67 and no. 14 and 16 in Fig. 1), in order to avoid any external or internal circuit complications (i.e. damage to the power source or the device itself) from having two different power sources connected at the same time.

Takizawa discloses the use of an override circuit (BAT controller in Fig. 1) to disconnect one of the power sources when the other one is connected (col 2 ln 15-28 and col 6 ln 34-41), in order to provide power from one source while avoiding potential power transfer between the two power supplies. Additionally, the use of an overriding diode may not be specified by Takizawa since he does not describe the detailed components of the BAT controller, but it would have been obvious to one of ordinary skill in the art to use an overriding diode in the override circuit, since the invention would perform equally well with and carry out the same function with either configuration (the use of a diode will keep costs low and simplify the circuit), absent any criticality not yet identified by the applicant.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to disconnect the secondary power source when the primary source was connected in the device of Oglesbee, as did Krall, and to include an overriding circuit, as did Takizawa, so that multiple power sources could selectively provide power while avoiding any damaging/undesired effects from the power sources being connected at the same time (provides greater control of the circuit).

With respect to claim 25, Oglesbee discloses sensing a voltage difference between the system power terminal and the positive battery terminal to generate a feedback control signal usable for varying the level of the adjustable voltage at the control terminal of the regulating transistor based on the voltage difference and a voltage at the control terminal of the regulating transistor (col 2 ln 58-67, col 3 ln 37-46, and col 6 ln 43-63). Please also see the rejection of claim 13 above.

With respect to claim 26, Oglesbee discloses wherein the transistor has a configurable body contact and fully disconnects the internal battery from the system power terminal during a disable mode (col 3 ln 36-46 and col 4 ln 21-49).

3. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oglesbee (US 6,246,214) and Krall (US 5,621,299), as applied to claim 16 above, and further in view of Henrie (US 6,170,062).

With respect to claim 17, Oglesbee does not expressly disclose wherein the external primary power source is an AC adapter or wherein another external power source is a USB power interface.

Krall discloses wherein the external primary power source is an AC adapter (no. 63 in Fig. 1 and col 4 ln 59-65), in order to provide additional sources of power for the system which are readily accessible at numerous locations where the device might be used.

Henrie discloses a dual power supply on a USB system wherein a secondary external power source is a USB power interface (abstract, Fig. 9b, and col 2 ln 48-67), in order to provide a dual means of communication and power supply for various computer components.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include an AC adapter in the device of Oglesbee, as did Krall, and a USB power interface as the secondary external power source in the device of Oglesbee, as did Henrie, so that greater compatibility would be provided with various power sources available at different locations in which the device may be used, along with providing a port that could also be used to communicate with another device.

4. Claims 20, 22-24, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oglesbee (US 6,246,214) and Krall (US 5,621,299), as applied to claim 16 above, and further in view of Fugate (US 2002/0021164).

With respect to claims 20, 22-24, 30, and 31, Oglesbee discloses wherein the regulating transistor is a MOSFET (or field effect transistor) with a configurable body contact and with a source terminal coupled to the system power terminal and a drain terminal couple to the internal battery, wherein the configurable body contact is coupled to the system power terminal during a charging mode and to the internal battery during a discharging mode, which are detected by the controllers (no. 203 in Fig. 2, abstract, col 1 ln 10-14, and col 3 ln 8-15), and coupling a switching diode across the regulating transistor (no. 202 in Fig. 2).

However, Oglesbee does not expressly disclose wherein the method further comprises a comparator with input coupled across the transistor to sense a voltage polarity of the regulating transistor and an output to control connections for the configurable body contact, or wherein the configurable body contact connects to a channel terminal with a relatively higher voltage during a shutdown mode.

Although, Oglesbee does have a comparator with inputs technically coupled across the transistor (see no. 310 in Fig. 4).

Fugate discloses a transistor with a configurable body contact (no. 22 in Fig. 2) and a comparator with inputs coupled across the transistor (see Fig. 2 at Vdd and Vo), wherein the output controls connections for the configurable body contact (no. 32 in Fig. 2), wherein the configurable body contact connects to a channel terminal with a relatively higher voltage during a shutdown mode (para 0002, 0003, 0007, 0008, and 0009), in order to provide a safer power down with slow and fast falling power supplies.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include a transistor with a body configurable contact and a comparator coupled across the inputs of the transistor to control the connection as mentioned above in the device of Oglesbee, as did Fugate, so that a safer connection could be provided depending on whether or not the battery was being charged or discharged.

5. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Oglesbee (US 6,246,214), Krall (US 5,621,299) and Takizawa (US 5,739,596) as applied to claim 16 above, and further in view of Shimano (US 6,418,075) and Stich (US 5,729,120).

With respect to claim 29, Oglesbee does not expressly disclose first and second bypass transistors being p-type transistors, or wherein pull-up resistors and coupled to the control terminals of the bypass transistors, or wherein pull-down transistors are coupled between the control terminals of the bypass transistors.

Takizawa discloses the use of first and second bypass transistors (as noted in the rejection of claim 16 above) an override circuit (BAT controller in Fig. 1) to disconnect one of the power sources when the other one is connected (col 2 ln 15-28 and col 6 ln 34-41), in order to provide power from one source while avoiding potential power transfer between the two power supplies. Additionally, the use of pull-up resistors and pull-down transistors is not specified by Takizawa since he does not describe the detailed components of the BAT controller. Furthermore, it would have been beneficial to use a P-channel MOSFET due to circuit simplification in medium and low power applications (versus an N-channel MOSFET).

Shimano discloses the use of pull-down transistors for a control circuit (col 6 ln 65 to col 7 ln 2 and PDT in Fig. 6b), in order to allow a greater range of control for a power supply apparatus while still maintaining an automated circuit.

Stich discloses the use of a pull-up resistor for a control circuit (col 18 ln 55 to col 19 ln 31 and no. 326 in Fig. 8b), in order to allow a greater range of control for a power supply apparatus while still maintaining an automated circuit.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include an overriding circuit in the device of Oglesbee, as did Takizawa, and to use pull-up resistors and pull-down transistors in that arrangement, as did Shimano and Stitch, so that multiple power sources could selectively provide power while avoiding any damaging/undesired

effects from the power sources being connected at the same time (while also allowing automated control of the circuit without the use of expensive parts).

Response to Arguments

6. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection, which were necessitated by amendment. Please see the references/citations above for clarification.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aaron Piggush whose telephone number is 571-272-5978. The examiner can normally be reached on Monday-Friday 9:30am-6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm Ullah can be reached on 571-272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AP

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PRIMARY EXAMINER